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ABSTRACT

The Learning Booth, an educational product developed and tested by the Far West Laboratory, was designed to offer a young child (at kindergarten or first-grade level) an experience which enables the child to learn to solve problems and find answers independently. Other training materials enable users to set up and operate a learning booth for young children. This study evaluates the learning booth and the training program as educational products, then discusses performance on the learning booth as it relates to ethnicity, intelligence test scores and future reading test performance. (Author)

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LEARNING BOOTH PERFORMANCE: A MEASURE OF BASIC LEARNING ABILITY?

A paper presented at the
1973 American Education Research Association Convention
New Orleans, Louisiana February 27, 1973

by:

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1973 AERA Presentation

Learning Booth Performance: A Measure of Basic Learning Ability?

Introduction

In 1963, Omar Khayyam Moore defined a responsive environment as one that satisfies the following conditions:

1. It permits the learner to explore freely.
2. It informs the learner immediately about the consequences of his actions.
3. It is self-pacing; i.e., events happen within the environment at a rate determined by the learner.
4. It permits the learner to make full use of his capacity for discovering relations of various kinds.
5. Its structure is such that the learner is likely to make a series of interconnected discoveries about the physical, cultural, or social world.

Moore proceeded to build an educational experience for young children that incorporated and encouraged these conditions. As an example of a responsive experience, Moore and an engineer from McGraw Edison designed a special typewriter, a computer-linked machine that could be easily programmed to respond to children in a variety of ways. The device became known as the "Talking Typewriter" and was the focus of Moore's Hamden Hall Country Day School for young children (ages 3 to 6) in Hamden, Connecticut. In his school, Moore used one computer-assisted booth operated "offstage" by a booth attendant. He also used three booths with electric typewriters and booth attendants who responded to children inside the booth. Children in the school were invited to go to a booth, and they could go or not as they chose. When in the booth, the child engaged in the language skills of speaking, writing (typing), listening and reading. A side benefit of the booth experience was manuscript printing, a motor skill many children apparently acquired from repeated sights of well-formed

letters.

After visiting the Hamden school, observing the booth and discussing with Moore the notion of a responsive environment, Glen Nimnicht was convinced that approach had pragmatic merit. When he started the New Nursery School in Greeley, Colorado in 1964, a major objective was to test the responsive environment typing or learning booths, and two booths were set up. However, at this time the computerized typewriter was not available. When it became available, it was not used for two reasons: First, it was expensive (about $30,000 at that time) and was therefore impractical for widespread use in schools; and second, its sophistication ruled out the use of lay people as booth attendants and one idea to be tested was whether lay people could become effective booth attendants, thus creating potential service jobs for non-professional educators.

After three years of experimental work at the New Nursery School, it was found that the booth experience was not particularly valuable for the three-year-old children in the school. The achievement of five-year-old children with two years of experience in the booth was no different from that of five-year-old children with one year of booth experience. Of course, the booth was found successful for four-year-old children. One year of booth experience produced achievements like letter recognition that augured well for future success in reading.

In 1968, 15 communities contracted with the Far West Laboratory to offer a Follow Through program for five-, six-, seven-, and eight-year-old children. Since the Learning Booth had been successful with four-year olds in the NNS, it was felt that it might also be a valuable experience for kindergarten children and first-grade children in communities without kindergarten classes.

Extensive development of the Learning Booth (Barnes, Barry et al., Guide for Learning Booth Attendants, 1970) was undertaken. It was field tested in each of the 15 Follow Through communities during the 1968-69, 1969-70, and 1970-71 school years.

How the Product Functions

In each kindergarten, or first grade in school districts which do not have kindergarten, a booth attendant asks a child two or three times a week if he would like to "play with the typewriter." If the child says "yes," the attendant takes him to a booth equipped with an electric typewriter and related materials. The child is allowed to play with the typewriter for as long as ten minutes. The child begins in the booth by exploring the typewriter while the attendant responds to the child by naming the symbols he strikes, such as "X, A, Y, M, B, and return." The child will move from this first phase of Free Exploration to finding and typing a letter that is shown to him. Eventually, the child progresses to typing words of his own choice, then to typing stories he has composed.

Four rules guide the booth activities or games:

1. Anytime a child asks to leave the booth, he may do so.
2. Anytime a child asks to play in an earlier phase, he may do so.
3. Anytime a child initiates conversation, the booth attendant responds but the attendant does not initiate conversation.
4. The booth attendant asks a child to type only once a day. If the child says "no," the attendant does not ask again. If the child asks to type later on, he may do so.

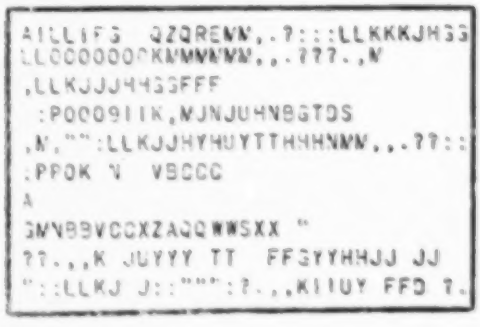
The Learning Booth games have been divided into five phases:

Phase I - Free Exploration

The child plays with the typewriter while the booth attendant tells him what he is doing and the typewriter shows him what he has done. As the child strikes letters, numbers, or punctuation marks, the attendant names them. When a child hits more than one key at a time, the typewriter jams and is turned off by the attendant with an electric foot switch. The child discovers, therefore, that the typewriter works only when he strikes one key at a time. During free exploration, he is learning to associate abstract symbols and sounds.

A child is ready to move from Phase I to Phase II when the booth attendant can answer yes to these questions: Has the child been in the booth at least three times? Does he usually type one key at a time? Does he use the return key correctly?

This is a record of one child's typing during his first visit to the booth.

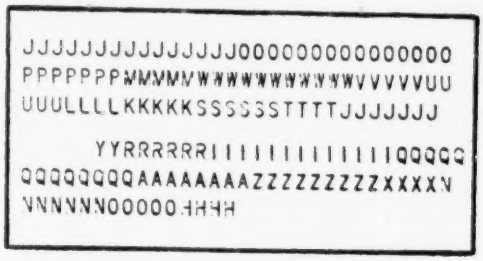


Phase II - Search and Match

In Phase II the child matches letters on the keyboard with magnetic and printed letter.

Step 1. In this step the typewriter remains off as long as the child searches for the magnetic letter shown by the booth attendant on a chart simulating the keyboard; the attendant turns the typewriter on as the child types that letter.

Step 2. Step 2 makes use of cards. One letter or numeral is on each card and the child searches the keys to match that letter or numeral. The child learns to match correctly because the typewriter and booth attendant respond only to correct matches. This is a record of a child in Phase II.

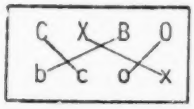


Phase III - Discrimination

When a child matches most letters and numerals in Phase II, Step 2, he is ready for Phase III.

Step 1. In Step 1, the child discriminates between two or more letters on cards. The booth attendant names one of the letters and the child must decide which letter to type. The first cards show letters that look very different, for example C and X. Later cards have letters such as P and R, and finally there are letters that look and sound alike such as C and G. Thus, the task gradually becomes more difficult.

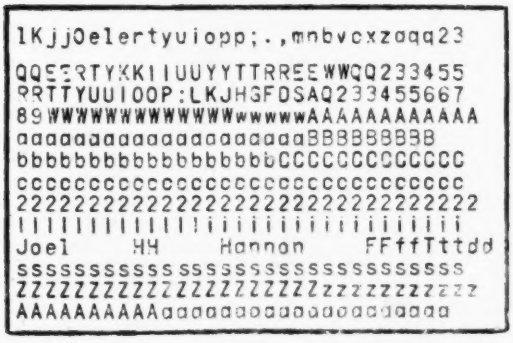
Step 2. In Step 2, the child matches capital letters with their corresponding small letters. The child draws a line from each captial to its corresponding small letter. For example,

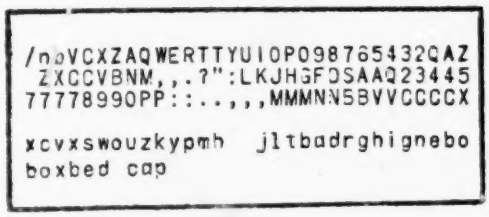


Step 3. Cards with capital and small forms of letters are used in Step 3. The child learns to use the upper and lower case keys.

Step 4. The cards in Step 4 have only small letters printed on them. The child must find the corresponding capital letter on the typewriter.

Below are records of children in Phase III

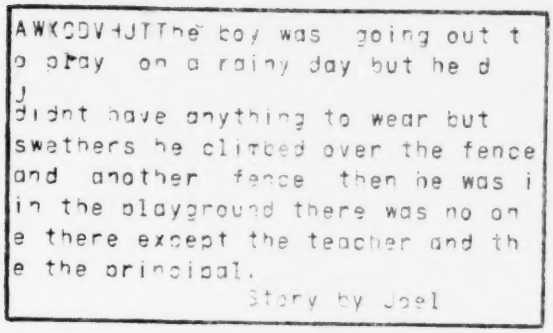


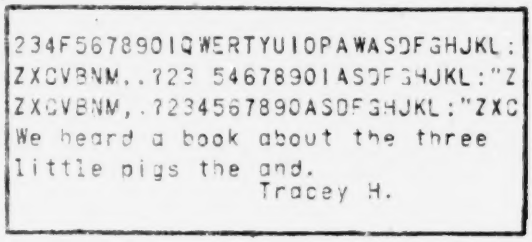


Phase IV - Words and Stories

In Phase IV, the booth attendant asks the child if he would like to type a word. If the child doesn't know what a word is, he is told that his name is a word. When the child tells the booth attendant a word, he prints it on a flashcard and lets the child type it using capital and small letters correctly. (Step 1)

When the child recognizes eight to ten words, he is asked if he would like to write a story. As the child tells the story, the booth attendant prints it, reads it, and tells the child he may type the story if he wishes. (Step 2)


AWXCDV4JTThe boy was going out t
o play on a rainy day but he d
J
didnt have anything to wear but
swethers he climbed over the fence
and another fence then he was i
in the playground there was no on
e there except the teacher and th
e the principal.
Story by Joel


234F5678901QWERTYUIOPAWASDFGHJKL:
ZXCVBNM,.?23 54678901ASDFGHJKL:"Z
ZXCVBNM,.?234567890ASDFGHJKL:"ZXC
We heard a book about the three
little pigs the and.
Tracey H.

Phase V - Classroom-Related Activities

Step 1. In Step 1, the child is presented with Durrell-Murphy cards. One card might show a picture of a cat and the words "pat," "sat," and "cat." The child types the word which best describes the picture. The correct answer is on the back of each card.

Step 2. Step 2 is a variation of story writing in which the child writes a note to a friend in the classroom and posts it on a message board or in a "mailbox."

Step 3. Step 3 is word discrimination with phonograms. The child sees a card containing a phonogram matrix such as the following.

map	rap	tap
mug	rug	tug
man	ran	tan

One word is covered and the problem for the child is to type that word. In the above phonogram, the child can discover what the word is if he notices that the beginnings are the same in each column and the endings are the same in each row.

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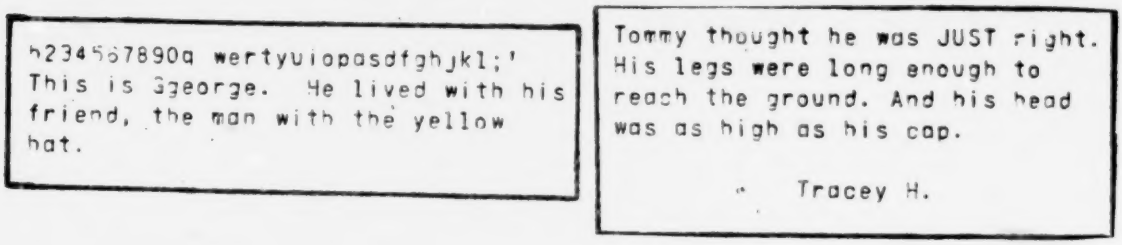
Step 4. In the last step in Phase V, the child brings a book to the booth which the attendant reads to the child. The child is given a chance to read the words he knows and to type any of the words from the book.


h234567890a wertyuiopasdfghjkl;'
This is George. He lived with his friend, the man with the yellow hat.
Tommy thought he was JUST right. His legs were long enough to reach the ground. And his head was as high as his cap.
Tracey H.

PART II - PRODUCT EVALUATION

A. Objective I - Offering a Child an Experience

The primary objective of the Learning Booth is to offer a child an experience in which he can learn to solve problems and find answers by himself; in which he can discover relationships or rules; and in which he can develop an attitude that encourages problem solving. A child who depends on himself to learn has learned how to learn.

Most problems presented in the booth are related to reading. But teaching language development skills that lead to reading and writing is not the intentional objective of the booth. If a child learns to read and write while he is learning to solve problems, then he has achieved an incidental if highly valued objective.

Criterion statement. During the first two years, no criterion was set in terms of what level of performance would indicate success of the program. There was more concern with the nature of the learning experience. However, on the basis of previous data, in the third year we did expect that if the booths operated effectively, some children would complete the booth program (reach Phase V) and that the majority (75%) would end the year having completed Phase III.

In terms of specific skills, completing Phase III would mean that the child:

a. has learned that the typewriter only works when he strikes one key at a time,
b. has discovered the purpose of the "return" key,
c. can match most of the letters, that is, when shown a letter he can find it and will type it;
d. has discovered the rules for discrimination,

e. can discriminate between a majority of letters, that is, when he is shown two letters and the booth attendant names one of them, he finds the letter on the keyboard and strikes it;
f. can solve a problem involving eliminating known responses to arrive at an unknown response;
g. can associate the capital and lower case forms of most letters; and
h. has discovered how to use the "shift" key.

Findings

Child outcomes. Information to satisfy Objective I was obtained from 2454 1970-71 kindergarten and first-grade child-performance records from 15 districts. First, districts were grouped to reflect the quality with which the Learning Booth had been installed and operated.

Group I reflected satisfactory implementation by nine districts and was characterized by the following:

a. Booth operated from beginning of year.
b. Physical environment of booth layout satisfactory.
c. All booth procedures followed.
d. Administrative support in securing materials for booth, hiring personnel, and arranging for scheduling and/or
e. Enthusiasm by booth attendants to operate booth and maintain booth training procedures.

Group II represented unsatisfactory implementation by four disticts and was characterized as follows:

a. Booths operated most but not all of school year.
b. Some booths in district were in unpleasant locations--with poor facilities and/or
c. Most but not all booth procedures followed and/or
d. High booth staff turnover, consequently much time spent in retraining booth attendants.

Group III reflected unsatisfactory, poor implementation by two districts. The characteristics were:

a. Booths operational a small part of year due to organizational problems or theft of equipment.
b. Poor physical facilities.
c. Poor local training, consequently booth procedures not followed and/or
d. No administrative support for booth program.

Second, we stated that we would determine the product "acceptable" if three-fourths of the children participating in satisfactory Learning Booth programs completed Phase III.

The evidence satisfies the stated criterion and our expectations. As shown in Table 1 and Figure 1, for booths operating in a satisfactory manner, 91% of the children completed the year typing at or above Phase III, Steps 3-4. Further, 80% of the children completed Phase IV, and 55% completed Phase V. That is, in addition to skills listed above, by the end of the year 55% of the children in Group I districts had experiences where they did the following things:

a. typed words and stories;

b. used Durrell-Murphy cards. One card might have a picture of a cat and the words "pat," "sat," and "cat." The task is for the child to type the correct word "cat;"

c. typed notes to a friend and read those notes;

d. discovered rules in a phonogram matrix game; and

e. identified and said words he recognized in a storybook chosen by the child and read by the booth attendant.

The criterion for Objective 1 was also met by Group II districts, where just three-fourths of the children completed Phase III. As shown in Figure 1, performance of children in groups II and III is considerably lower than districts offering a satisfactory booth program.

Only 40% of the children in Group III completed Phase III, Steps 3-4 and only about one out of ten completed all the experiences offered in the booth.

Table 1. PERCENT OF KINDERGARTEN AND FIRST GRADE CHILDREN WHO COMPLETED EACH PHASE AT END OF 1970-71 FOR THREE LEVELS OF BOOTH IMPLEMENTATION

Group	Number of Districts	Number of Children	Percent Completing Phase					
			I	II	III 1-2	III 3-4	IV	V
I. Satisfactory	9	1549	100	99	97	91	80	55
II. Unsatisfactory	4	714	100	98	94	75	59	39
III. Unsatisfactory (Poor)	2	191	100	96	78	40	21	13
TOTAL	15	2454	1	4	13	13	22	47

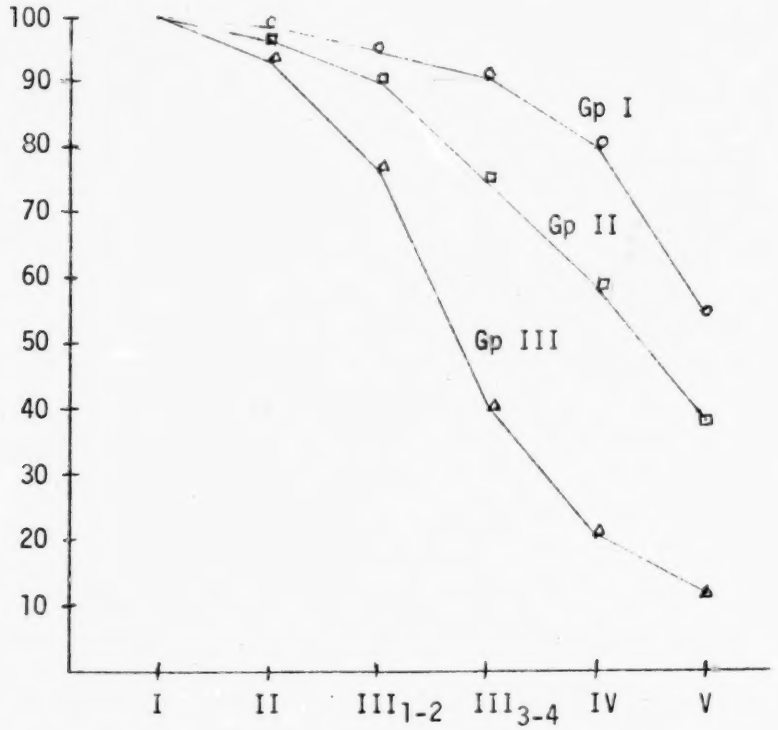


Figure 1. PERCENT OF CHILDREN IN THREE GROUPS COMPLETING PHASES AT END OF 1970-71 YEAR

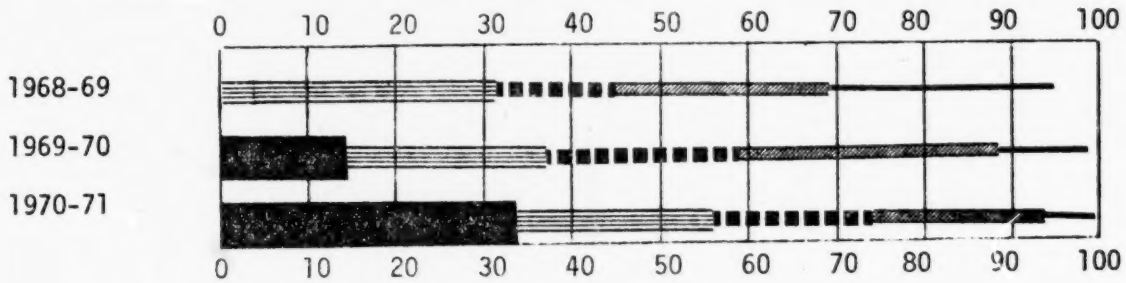
1970-71 Compared to Previous Years

A comparison of 1970-71 child achievement data with the previous two years shows dramatic progress in booth operation for both kindergarten and first-grade children (Tables 2 and 3).

Table 2. PERCENT OF KINDERGARTEN CHILDREN COMPLETING BOOTH ACHIEVEMENT PHASES DURING 1968-69, 1969-70 AND 1970-71 TABLED AND GRAPHED

Year	Number	Percent Who Completed Phase					
		I	II	III(1-2)	III(3-4)	IV	V
1968-69	801	100	92	68	44	31	*
1969-70	1308	100	98	87	59	37	14
1970-71	1391	100	99	93	73	56	33

*No Phase V in 1968-69.



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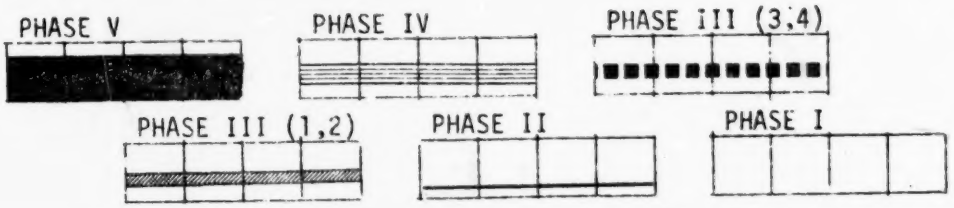
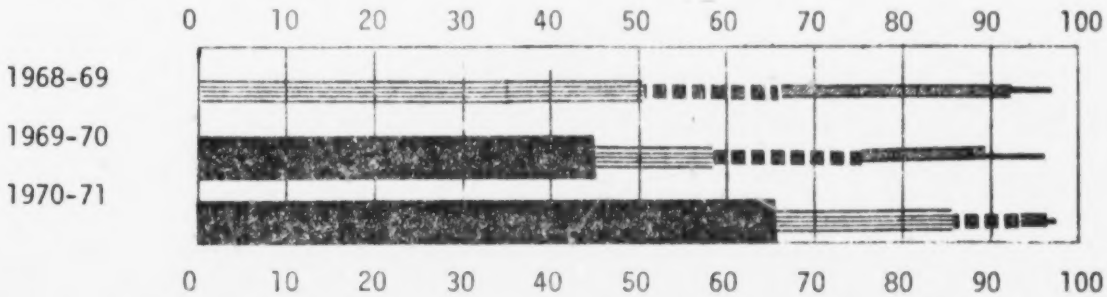


Table 3. PERCENT OF FIRST-GRADE CHILDREN COMPLETING BOOTH ACHIEVEMENT PHASES DURING 1968-69, 1969-70 AND 1970-71 TABLED AND GRAPHED

Year	Number	Percent Who Completed Phase					
		I	II	III(1-2)	III(3-4)	IV	V
1968-69	300	100	96	91	63	50	*
1969-70	1083	100	96	89	75	58	45
1970-71	1064	100	99	98	93	86	66

*No Phase V in 1968-69.



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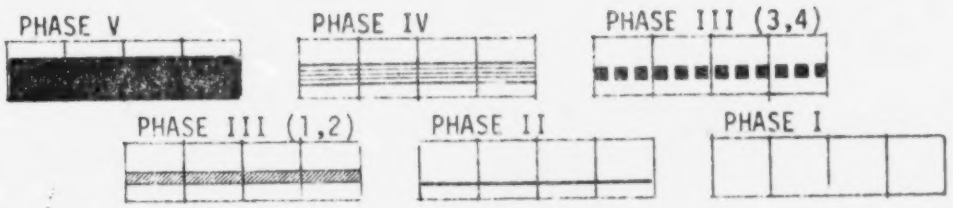

Of kindergarten children, 44% met the criterion and completed Phase III in 1968-69, 59% met the criterion in 1969-70 and 73% did so by the end of the 1970-71 school year. Growth shown by first-grade achievement is equally impressive: 63% completed Phase III in 1968-69, 75% did so in 1969-70, and 93% did so in 1970-71. During the 1968-69 school year, materials and procedures for Phase V were in the developmental stage; consequently, a child could attain only Phase IV.

By the 1969-70 school year, Phase V was developed and the initial Learning Booth manual had undergone extensive improved revision. These changes probably account for the increased achievement made in the 1969-70 school year.

Besides two years of experience, the main programmatic variable to account for the progress in achievement between 1969-70 and 1970-71 is the Senior Booth Attendant. One booth attendant in each district, usually one of the better attendants, was designated as the Senior Booth Attendant.

The Senior Booth Attendant was responsible for the overall booth operation. In this role, the Senior Booth Attendant could oversee the booth operation and was available to answer directly questions on booth training raised by booth attendants or handle problems when they arose.

The Laboratory asked all booth attendants to contact their Senior Booth Attendant if they had questions or problems. If the questions were not answered or the problems not solved satisfactorily, the booth attendants were then to contact the Laboratory. During the 1970-71 year, only three problems were brought to the Laboratory's attention; they were handled by written communication.

The creation of the position of Senior Booth Attendant had many benefits. Problems were handled on the spot without delay. If a booth attendant resigned, the Senior Booth Attendant was able to hire and train the replacement with a minimum of delay. The quality of booth operations was improved, and most important, the Learning Booths operated one to three months longer in 1970-71 than in the previous two years.

The Learning Booth and Basic Learning Ability

Because of the nature of the booth experience, it offers a child a unique learning situation: Most children are presented with a unique, unfamiliar set of materials and problems, and the materials (including the adult) respond to the child's behavior, the experience is focussed; the experience is not forced on him and he has a choice to come or go at will; he has individual attention; he

works at his own pace and can return to previous levels of performance or jump ahead to others; and his performance need not be based on one point in time.

The learning conditions in the Learning Booth come closer to providing a situation where basic learning ability may be more validly assessed than most experiences currently used to assess a child's ability. Asking a child to remember and repeat digits, to answer specific questions like which of several pictures is a chisel, or to do a pre-arranged narrowly defined task like sorting blocks is the usual way a child's "ability" is determined. Surely, we are all aware that there may be more deficiencies in measures of ability than in the ability of the children chey measure. Not the least of these deficiencies is that present measures are cross-sectional rather than longitudinal. Furthermore. it is doubtful that they assess problem-solving ability or the ability to adapt, to do something when the answer is not known other than miss the question. An index of learning ability based on achievement in the Learning Booth may come closer to assessing how well a child can actually problem solve over time.

Of course, Learning Booth performance is believed to be a valid predictor of problem-solving ability. Those who seek this as a prime objective of education should recognize the merit of booth performance as a measure of its growth and development. However, no measures of this ability are yet widely recognized although the Far West Laboratory and many others are developing them. As philosophically appealing as teaching problem-solving may be, most educational researchers and developers must still justify their curriculum innovations with standardized measures. For Learning Booth performance to be a practical measure, then, it would have to measure something different from intelligence tests yet still contribute to reading achievement.

Although limited, existing data allow an investigation of the relationship between Learning Booth performance, intelligence test scores, and subsequent reading test performance.

Learning Booth and Intelligence Test Scores

In one district, intelligence test and Learning Booth data was available on 65 kindergarten children. The children had received four subtests of the Wechsler Primary and Preschool Intelligence Test (WPPSI) at the beginning of the year. These four subtests (Vocabulary, Similarities, Picture Completion, and Block Design) collectively yield an estimate of the child's "intelligence." The national norm for these four subtests would be about 40. The total time a child spent in the Learning Booth and the final Phase/Step at which the child performed were then related to Wechsler Score (Figures 2 and 3).

Insert Figures 2 and 3 here

The range of WPPSI test scores for this group of children, collected before their booth experience, was 25 to 65 with an average of 44.6 and a standard deviation of 8.8. The correlation between WPPSI score and time in the booth (-.14) suggested that children scoring higher on the WPPSI spent less time in the booth. Examining children who performed outside (±) one standard deviation on the WPPSI, the low relationship becomes clear. Nine children who scored extremely high on the WPPSI spent less than about two hours (about 10 trips) in the booth. On the other hand, three children who scored relatively low on the WPPSI spent more than six hours in the booth. It is not yet clear whether this finding is attributable to the children's self-selection of booth experiences or whether booth attendants may not invite high-scoring children as often.

The relationship between pre-WPPSI score and booth achievement is negligible ($r=.05$). Children scoring above and below one standard deviation reached all levels of booth performance. But why so many high-scoring children failed to reach advanced phases remains unclear. One hypothesis is that booth attendants did not move them fast enough to the phases likely to be appropriately challenging,

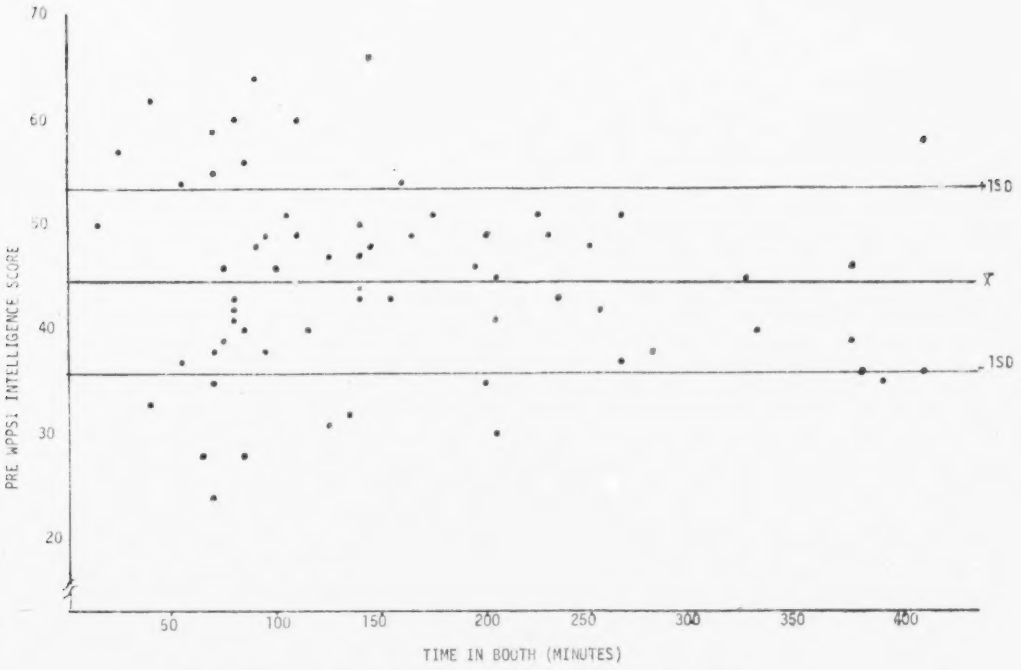

Figure 2 District A 1969-70 TOTAL TIME IN BOOTH X WPPSI PRE TOTAL

(r= -.14)

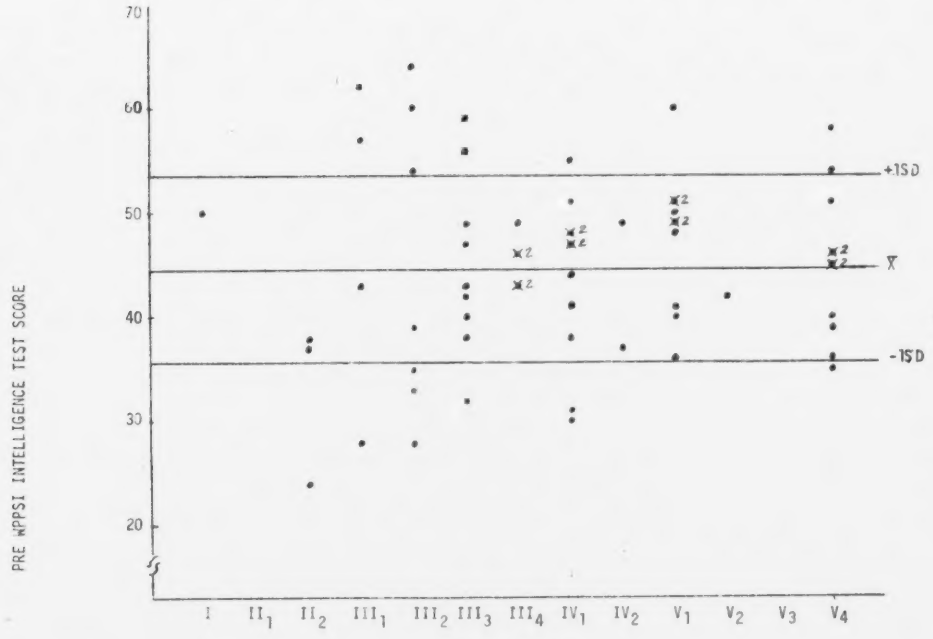

Figure 3 District A 1969-70 FINAL PHASE/STEP X WPPSI PRE TOTAL

(r=.05)

thus boring them.

Both figures show that learning booth performance is different from intelligence. Furthermore, they clearly show that some children with low WPPSI scores do remarkably well in the booth. The match between them and the booth experience is very close. If we can identify those children more precisely, the Booth may at least be of specific if not general value.

Learning Booth and Reading Test Scores

Experiences children have in the Learning Booth are meant to focus on problem solving. However, the content of the problems are letters and words. Therefore, it would be reasonable to assume that a child's booth performance might have an effect on to subsequent reading achievement. Available data on reading test performance for children who received the booth experience allowed this relationship to be explored.

Learning Booth Performance and Reading Achievement, Controlling for I.Q.

Booth data on the 65 kindergarten children discussed above was collected in the 1969-70 school year. In 1971, first grade Cooperative Primary Reading Test scores were available for these same children. Also, intelligence test scores collected at the beginning of kindergarten were also available as was chronological age.

Because there is a high correlation between a measure of "intellectual ability" (the four subtests of the WPPSI) and a standardized reading test, (the Cooperative Primary Reading Test), it is wise to control for "intelligence" and to examine the unique contribution the booth experience had on reading test scores. Our procedure also controlled for chronological age.

Using multiple linear regression, the contribution of a subset of variables in explaining or predicting a criterion, in this case a first grade Cooperative Primary Reading Test score, is determined by an index of relationship calculated from the variables included. This index is then compared to an index with selected variables deleted, the resulting change being attributed to those deleted variables.

Before regression models were formulated and computed, the data were examined and indicated that a non-linear relationship may exist between the Learning Booth variables and the reading achievement scores. To account for this possible higher-order curvilinear relationship and to account for the possibility that time and phase interact, three additional Learning Booth variables were generated from the amount of time a child spent in the booth and the final step the child completed. Variable (5) was designated to reflect an interaction between (3) and (4); it was constructed by simply multiplying a child's time spent in the booth with the final step he completed. Generated variable (6) was time squared, and generated variable (7) was final step squared. These variables were squared to account for the possibility of a curvilinear relationship between them and the criterion.

The intercorrelations of the eight variables in this study appear in Table 4.

Table 4. INTERCORRELATIONS BETWEEN LEARNING BOOTH VARIABLES AND INTELLIGENCE SCORES ON 65 CHILDREN COLLECTED IN 1969-70 AND 1970-71 COOPERATIVE READING TEST COLLECTED IN THE WINTER OF 1971

Variable	2	3	4	5	6	7	8
1. Score on 4 Wechsler Subtests taken at beginning of kindergarten	-04	-14	05	-08	-13	04	39
2. Age at time of Wechsler test (in months)	-	-25	-10	-23	-26	-15	04
3. Total time spent in booth (in minutes)		-	76	96	97	77	08
4. Final step completed (1 to 13)			-	83	70	98	18
5. Time X step				-	97	87	16
6. $(\text{Time})^2$					-	74	11
7 $(\text{Step})^2$						-	18
8. End of first grade primary reading score.							-

As one would expect, the correlation between the I.Q. measure (variable 1) and the Cooperative Primary Reading Test score (8) is positive .39. The total time spent in the booth (3) and final step (4) correlated .08 and .18, respectively, with end of 1st grade reading score, neither of which is statistically significant. However, the generated variables reflecting more complex relationships between booth and reading score correlated .16, .11, and .18 with first-grade reading score. While not statistically significant, these correlations were in a positive direction.

Regression Analysis

The data suggested that booth performance was somewhat related to end of first-grade reading scores. To explore this relationship, multiple regression analysis was utilized. A multiple regression model was run with the following specifications:

Criterion: First-grade Cooperative Primary Reading Test score.

Predictors: step, time, step x time, $(time)^2$, $(step)^2$, I.Q., and age.

The resulting RSQ (multiple correlation coefficient R squared--an index of prediction) was 29 and can be interpreted as the percent of variance in the criterion that is accounted for or contributed by the predictors.

A restricted model, deleting all Learning Booth data but retaining I.Q. test score and age, was then run. The RSQ dropped to .16. The difference, 29-16=13, can be directly attributed to contributions of the Learning Booth experience. That is, when the effect of I.Q. and age are partialed out or statistically controlled, the Learning Booth kindergarten experience accounts for about 13% of end of 1st grade reading scores. Although the finding is rather modest, it is noteworthy given the restricted nature of the criterion instrument and the time lapse between booth training and subsequent reading assessment. The index of predictability with booth data included and controlling for intelligence test score and age is statistically significant at the .10 level (see Table 5) over no knowledge of booth performance. More important is the modest but likely relationship between experiences a kindergarten child has in the Learning Booth and an index of language performance measured by a standardized instrument one year after that experience.

Table 5. F TEST BETWEEN FULL MODEL WITH ALL VARIABLES PREDICTING READING SCORES AND A RESTRICTED MODEL WITH LEARNING BOOTH DATA DELETED

	RSQ	SS (ERROR)	Mean Squares	F
Full	.2870	6099.74	107.01	2.00
Restricted	.1563	7221.12	x x x	df = 5, 57
	.1310	1121.37	247.27	sig. .10 level

Where:

$$F = \frac{(RSQ_{\text{Full Model}} - RSQ_{\text{Restricted Model}})/df_1}{(' - RSQ_{\text{Restricted Model}})/df_2}$$

Where: df_1 = number of linear independent predictors = 5

df_2 = number of cases minus number of independent predictors = 65 - 8 = 57

Learning Booth Performance and Race

As interesting and important as relationships between Learning Booth performance and standardized intelligence and achievement scores are, they pale beside possible relationships with racial, economic, linguistic, or cultural differences. Although many such relationships are being analyzed, at this time we can only report one tentative relationship between Black and White performances. As Figure 4 shows, 52 Black first-graders in a southern Follow Through community started their booth progress more slowly than 32 White children, but they appeared to be learning faster in the advanced phases. Table 6 shows mean cumulative booth time of 239.2 minutes for Blacks and 223.0 minutes for Whites. This suggests equality between groups over time in a responsive environment. Since booth achievement is as conceptual as it is associative, support for this finding would have profound implications. However, Table 6 shows that 38.5 percent of Blacks got to the last step while 48.6 percent of Whites got to that step. Table 6 also shows that all Whites ended the year in phases IV or V while seven Blacks remained in phase III. So the data is as yet only indicative, not definitive.

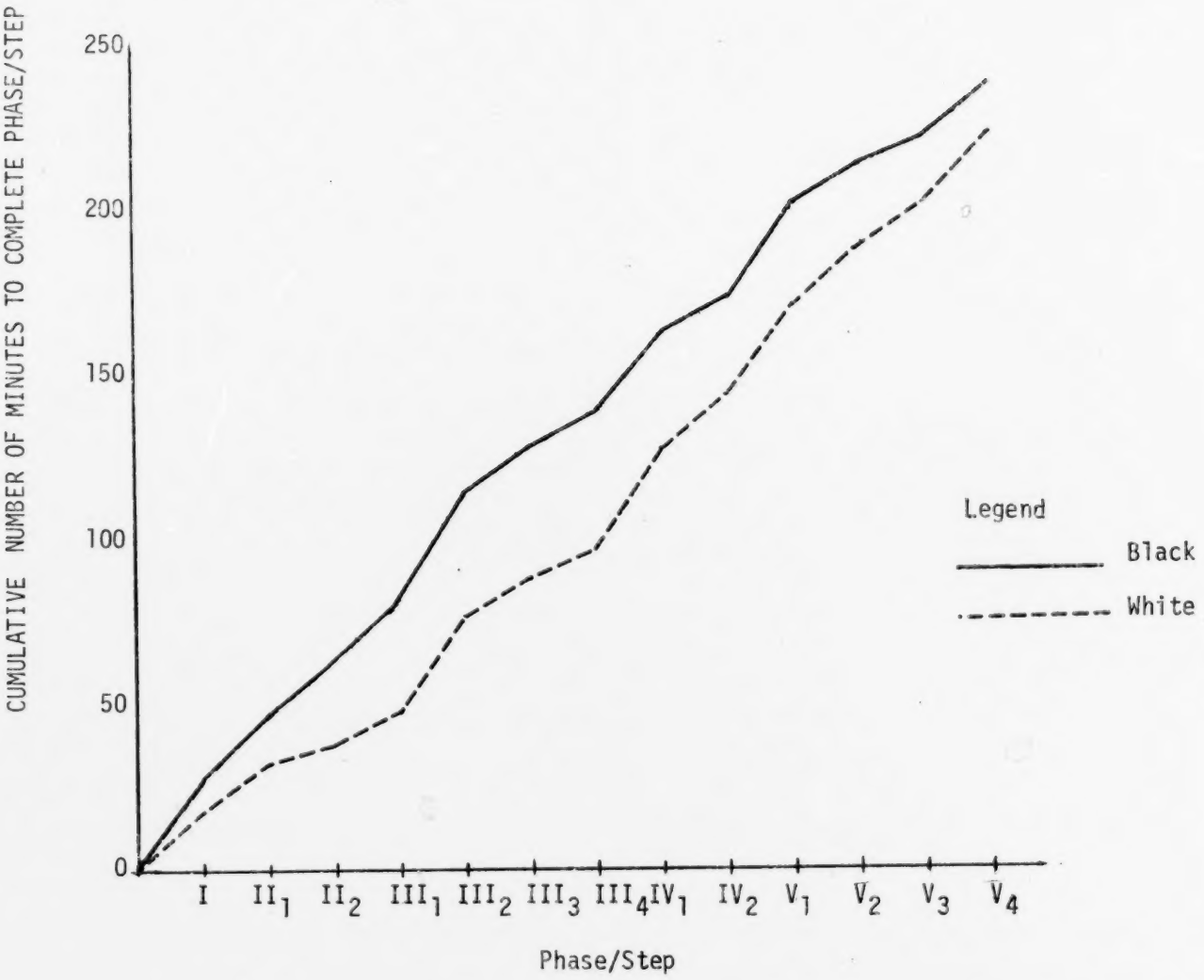

Fig. 4 Cumulative average time for 52 Black and 32 White first graders to complet phase/Steps.

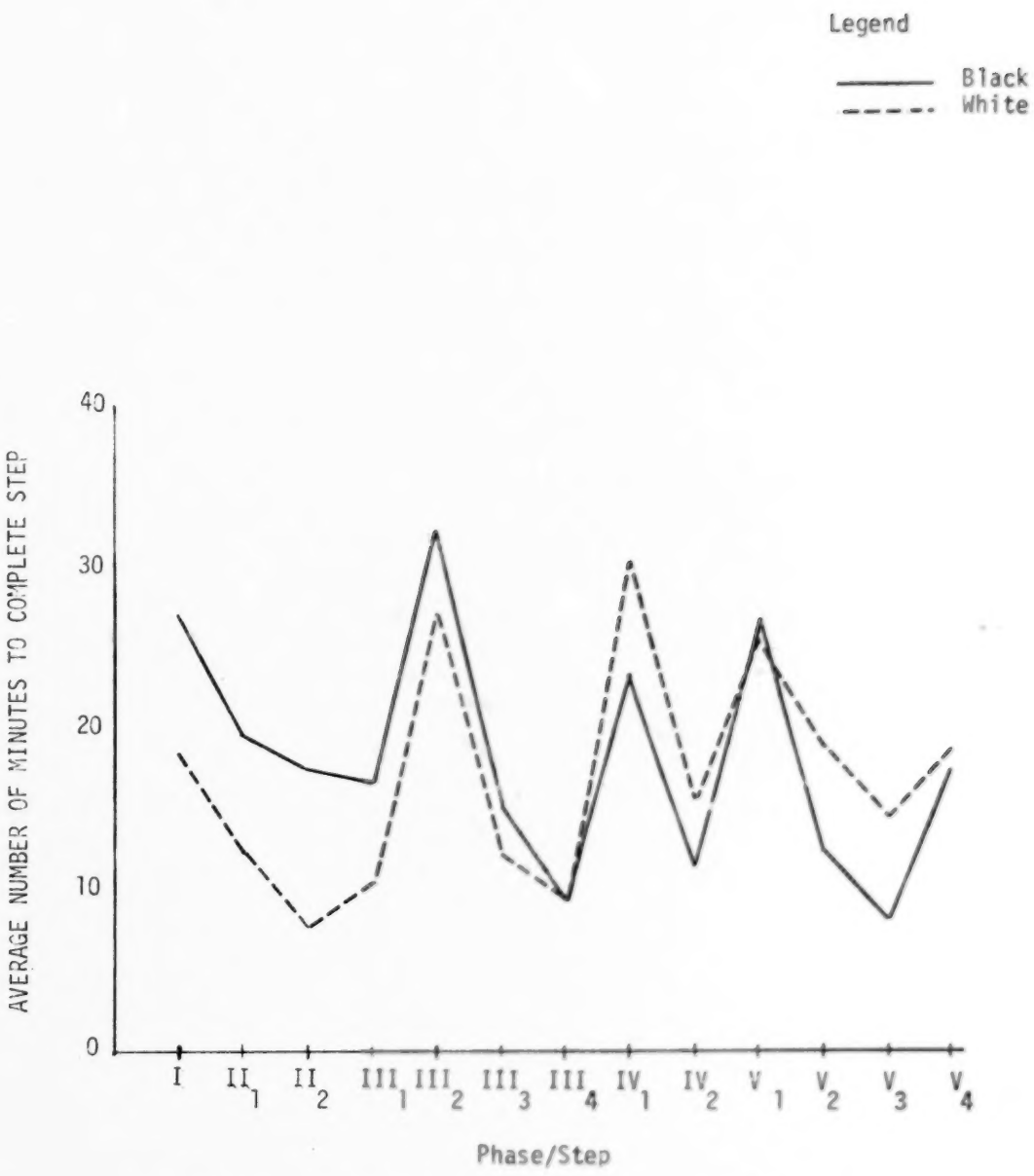

Fig. 4a Average time for 52 Black and 32 White first graders to complete each phase/step.

TABLE 6

AVERAGE NUMBER OF MINUTES CHILDREN TOOK TO COMPLETE SPECIFIC PHASES

	White N=32				Black N=52			
Phase - Step	Mean Time (Min.)	Number Reaching Phase - Step	% Reaching Phase - Step	Cum. %	Mean Time (Min.)	Number Reaching Phase- Step	% Reaching Phase - Step	Cum. %
I	18.5							
II_1	12.5				19.9			
II_2	7.6				17.4			
III_1	10.5				16.9	1	1.9	1.9
III_2	27.4				32.2	2	3.8	5.7
III_3	12.5				15.8	1	1.9	7.6
III_4	9.5				9.5	3	5.8	13.4
IV_1	30.4	1	2.7	2.7	23.3	4	7.7	21.1
IV_2	15.9	1	2.7	5.4	11.9	5	9.6	30.7
V_1	25.6	2	5.4	10.8	27.0	11	21.2	51.9
V_2	19.0	2	18.9	29.7	12.3	3	5.8	57.7
V_3	14.6	8	21.6	51.3	8.1	2	3.8	61.5
V_4	19.0	18	48.6	99.9	17.6	20	38.5	100.0
Total	233.0				239.2			

Discussion

This report summarizes the rationale and development of the Learning Booth, including a description and evaluation of the product, and then looks at children's Learning Booth performance as it relates to race and performance variables of reading and intelligence test scores. The relationships between booth performance and the two latter variables are interesting and positive, but relatively slight. The hoped-for relationship of near equality over time between Blacks and Whites is as yet undemonstrated. But there is less support for the opposite conclusion that Blacks and Whites are unequal.

The Learning Booth and the principles that guide its operation are meant to be part of an educational experience that is responsive to the needs and abilities of the learner. The Learning Booth may offer a way to observe and assess more validly the learning ability of a child. The measure has a slight positive relationship with traditional measures but should be most useful in predicting problem-solving behavior in responsive environments. How a child performs when he controls his own learning and what that child does with problems presented to him responsively may provide not only an index over time of the child's ability to solve a variety of problems, but also a demonstration of the power of real individualized learning and the superficiality of supposed differences, disadvantages or deficiencies derived from present measures of learning ability.

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